all blossomed and many leaved out, grapes budded, early vegetables all up, and then the four days of hard freeze, 25th to 29th, utterly destroyed all new leaves and nearly all fruit buds, though at this date, April 1, some peaches seem to show life; strawberries checked in growth, but not killed; oats damaged some. Pond Creek: high winds, 2d, 10th, 17th, 24th, 27th, and 30th; wheat injured considerably thereby. Clifton: elm buds out on the 1st, and crocus in bloom. The first two-thirds of the month were very fine for farming, and much plowing and other work completed. From 24th to 29th, it was very cold with hard frosts, the blooms of the elm and early vegetation killed. Ponca City: peaches in bloom on the 25th; crops damaged by cold in this section. South McAlester: no storms and unusually warm during early part of the month, but uncommonly cold during the latter part of the month; not much damage done, as farmers were late in planting on account of hot weather; some fruit killed, but plenty left for a good crop. Anadarko: frosts of 26th and 27th killed all early fruit. Healdton: the frosts of 24th, 25th, and 26th, injured oats, wheat, and corn that were up, and all early vegetation.

Pennsylvania.—The extreme weather of the current month is paralleled by March, 1868, but exceeded by that of March, 1854, when the maximum temperature of 78° occurred, as compared with 76.5° on March 22, 1894. The latter was followed by the extraordinary fall of temperature to the minimum of the 27th, but the damage done to crops was not so severe as would have been the case had this fall been more rapid; however, peaches, apples, and strawberries are severely injured. In March, 1854, flowers and crops of every kind were ruined, the average temperature of the first 17 days was 50.5, and of the last 14 days, 33.8. The blizzard of March, 1888, attended a spell of cold weather, bringing the average temperature of the month down to 34.7.

South Carolina.—March opened under the most favorable conditions for farming operations. Abundant rains and snow in February had thoroughly saturated both the surface and subsoil; a few warm, dry days in the early part of the month dried the top of the softened ground making plowing easy and thorough. After the 5th the heat was steadily excessive up to the 23d, and during the latter part of this period the warmth was equal to that of the ordinary first half of June. Under the combined stimulus of heat and moisture the buds on fruit trees swelled and bloomed; forest trees put out their leaves; wild and cultivated berries advanced in growth with wonderful rapidity; grapes were three weeks in advance of their season; gardens were planted earlier than usual, and made exceedingly rapid growth; all grains made a thick, luxuriant stand; in short, gardens and fields, orchards and forests, flowers and grasses, shrubbery and fruit trees had the appearance usual in the middle of April. After the freeze and frosts of the 27–30th wheat and oats turned yellow, and that of the rankest growth fell to the ground; the leaves of fruit and forest trees turned black, withered, and shriveled; gardens and tender grasses all were as if scathed by fire; corn cut down level with the ground. Some late fruit may have escaped; berries have yet time to rebud where the vines and stalks are not killed; gardens and corn can be replanted; yet, making all allowances, the loss was enormous in the two items of fruit destroyed and the cost of seeds for replanting. It is thought that much ornamental shrubbery and many trees of all varieties, as well as grapevines, blackberries, and other bushes, etc., are killed. The full extent of the damage to grains can not be known until maturity and thrashing begins and the effect on the berry can be noted. The damage was not confined to part of the State but extended from the mountains to the coast. The northwestern portion was coldest, but vegetation was correspondingly backward.

The Director of the South Carolina State Weather Service has summarized the reports of damage done by the cold weather of March 26, 27, and 28, received by him from 106 stations fairly distributed over the 35 counties of that State, and from his tabular presentation of these reports the editor has prepared the following abstract:

Apricots and peaches; 89 reports. Totally destroyed, 84; partially, 5.
Figs and pears; 87 reports. Totally destroyed, 80; partially, 7.
Pomegranates and plums; 84 reports. Totally destroyed, 77; partially, 6.
Apples; 81 reports. Totally destroyed, 51; partially, 27.
Raspberries, strawberries, and blackberries; 77 reports. Totally destroyed, 66; partially, 11.
Rye and wheat; 45 reports. Totally destroyed, 2; partially, 38.
Oats; 53 reports. Totally destroyed, 1; partially, 46.
Corn; 47 reports. Totally destroyed, 21; partially, 25.
Melons, potatoes, cabbage, and garden truck; 92 reports. Totally destroyed, 84; partially, 8.
Grapes; 89 reports. Totally destroyed, 89.

South Dakota.—The season opened unusually early. The first and second decades of March were unusually warm, and more or less plowing and seeding was done in all portions of the State. The last decade was stormy and very cold, stopping all field work until about the first of April. There was some loss of cattle, but, it appears, not near as great as was at first reported.

Tennessee.—Unusually high temperature prevailed during the first three weeks of the month, when the daily means averaged about 12° above the normal. As a natural consequence of this abnormally warm weather, general farm work advanced rapidly and vegetation was much in advance of the normal. This warm period was followed by the most severe cold wave of the month, which reduced the temperature to considerably below the freezing point. Up to the 23d of the month farmers were fully two weeks in advance of last season, and crops of all kinds were in excellent condition, except peaches, which were badly injured in some localities by the cold in January. The cold wave of the 26th and 27th killed fruit, vegetables, young clover, oats, tobacco plants in some localities, and seriously damaged wheat and Irish potatoes.

Utah.—Vegetation did not advance much in March, and the spring may fairly be called a backward one.

Virginia.—During the cold wave of the 26th to 28th the temperature was generally lower than ever previously recorded for the time of year, and following the protracted and unusual warm weather, caused very great damage to all growing crops and destroyed nearly all early fruit and tender vegetation.

West Virginia.—The following is a résumé of 100 reports from the 44 principal agricultural counties: Up to and including the 24th the conditions were markedly favorable to the growth of all forms of vegetation, and farming operations were pushed accordingly. This abnormal state of temperature was followed on the 25th by conditions decidedly the reverse. * * * A hard freeze on the morning of the 26th, a hoar frost on the 27th, and a killing frost on the 28th proved very destructive to all forms of vegetation, in many instances being almost fatal as far as a future crop was concerned. * * * Owing to the rather open winter wheat was not as well protected by snow as generally, but some is up and looking fairly well. Clover and grass had started nicely, but much damage was done by the freeze and frosts. Some wheat and oats were also frozen. In some localities the fall of snow that accompanied the freeze protected the wheat and oats to a very great extent. Garden truck was doing nicely until the 26th; early planted potatoes and onions were badly injured by the cold, and gardens generally will be affected; apples, pears, peaches, plums, cherries, quinces, and grapes were all injured; in some districts peaches, cherries, and early apples were killed outright. Plowing and preparing ground for corn is well along, but was retarded somewhat by the recent cold snap, owing to the fact that the ground was frozen.

Wisconsin.—The month of March was one of high temperatures for the first eighteen days, and of temperatures at or below the normal for the balance. Except in the northern counties the ground has been without snow covering during the month, and while winter grains were exposed to the severe frosts of the latter part of the month it is thought that no serious damage has resulted; clover, however, is probably injured in some counties.

PRECIPITATION.

[*In inches and hundredths.*]

The distribution of precipitation over the United States and Canada for March, 1894, as determined by reports from about 2,000 stations, is exhibited on Chart III. In Tables I, II, and III, the total precipitation is given for each station; the departures from the normal are given for regular stations of the Weather Bureau in Table I. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above. The average departure for each State is given in the chapter of reports from the State Weather Services.

NORMAL PRECIPITATION.

The normal precipitation for the month of March is less than 1.00 over the Rocky Mountain and plateau regions and has a maximum of 8.00 over the higher portions of the Sierra Nevada range and on the immediate coast of Washington and Oregon, but diminishes rapidly as we proceed eastward to the summit of the Rocky Mountains. A normal of from 6.00 to 8.00 prevails over the Gulf States east of Texas and northward along the Appalachian range to southwestern Virginia. From 4.00 to 6.00 occur on the immediate Atlantic coast of the Middle and Eastern States.

PRECIPITATION FOR MARCH, 1894.

The total precipitation for March, 1894, exceeded 10.00 on the immediate coast of Oregon and Washington, and dimin-

ished from 10.00 on the northern coast of California to less than 1.00 at stations south of San Francisco. An area of 10.00 to 14.00 exists in southern Arkansas, and 4.00 or more fell over eastern Texas, eastern Oklahoma, Indian Territory, southern Missouri, western Tennessee, all of Arkansas, Louisiana, Mississippi, Alabama, and northeastern Florida. Little or no rain fell at a few stations in southern California and western Texas.

DEPARTURES FROM NORMAL PRECIPITATION.

The precipitation for March was decidedly in excess of the normal in Arkansas, Oregon, Washington, North Dakota, Minnesota, and Lake Superior; it was decidedly deficient in California and the Atlantic States from Georgia to Maine. The principal deficits were: San Francisco, Cal., 2.7; Atlanta, Ga., Augusta, Me., and Washington, D. C., 3.2; Knoxville, Tenn., and Hatteras, N. C., 3.3; Boston, Mass., 3.4; New Haven, Conn., 3.6; Charlotte, N. C., 3.7; Eastport, Me., 3.8; Kittyhawk, N. C., 3.9. The principal excesses were: Neah Bay, Wash., 5.6; Roseburg, Oreg., 5.3; Astoria, Oreg., 7.2; Memphis, Tenn., 5.1; Little Rock, Ark., 4.2; Mobile, Ala., 4.1; Fort Smith, Ark., 4.0.

Considered by districts the precipitation for March, 1894, when compared with the normal for the month, furnishes the following percentages (precipitation is in excess when the percentage of the normal exceeds 100): Northern plateau, 228; northern slope, 238; North Dakota, 232; north Pacific, 172; west Gulf States, 144; upper Lake region, 122; upper Mississippi Valley, 115; southern slope (Abilene, Tex.), 106; east Gulf States, 105; southern plateau and Key West, Fla., 100; Missouri Valley, 95; middle plateau, 77; Ohio Valley and Tennessee, 76; middle Pacific coast, 70; lower Lake region, 63; south Atlantic States, 48; middle slope, 42; middle Atlantic States, 40; New England, 37; south Pacific, 30.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for March for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for March, 1894; (4) the departure of the current month from the average; (5) the extremes for March and the years of occurrence during the period of observation:

State and station.	(1) Average for the month of March.	(2) Length of record.	(3) Total for March, 1894.	(4) Departure from average.	(5) Extremes for March.			
					Greatest.		Least.	
					Am't.	Year.	Am't.	Year.
Arizona.	*Inches.*	*Years*	*Inches.*	*Inches.*	*Inches.*		*Inches*	
Fort Apache	1.68	18	1.36	— 0.32	4.44	1884	0.03	1879
Fort Mohave	0.48	23	.....	.....	2.50	1889	0.00	*
Whipple Barracks	1.51	22	0.88	— 0.63	5.51	1884	0.00	1882
Arkansas.								
Keesees Ferry	3.84	12	9.17	+ 5.33	9.17	1894	2.78	1892
California.								
Riverside	2.32	13	0.72	— 1.60	8.52	1886	0.00	1888
Colorado.								
Las Animas	0.69	12	T.	— 0.69	2.43	1891	0.00	1890
Florida.								
Merritts Island	2.57	16	0.84	— 1.73	7.92	1878	0.56	1892
Georgia.								
Forsyth	7.17	20	3.71	— 3.46	12.87	1875	1.37	1878
Idaho.								
Boise Barracks	1.70	20	1.64	— 0.06	7.66	1871	0.03	1885
Fort Sherman	2.00	11	7.00	+ 5.00	7.00	1894	0.14	1882
Indiana.								
Lafayette	2.70	14	2.81	+ 0.11	4.25	1886	0.46	1885
Iowa.								
Cresco	1.82	21	2.57	+ 0.75	4.55	1888	0.22	1889
Kansas.								
Independence	2.21	22	2.73	+ 0.52	5.54	1892	0.43	1872
Louisiana.								
Grand Coteau	4.72	11	8.68	+ 3.96	10.20	1884	0.80	1891
Maine.								
Orono	4.27	23	1.23	— 3.04	8.20	1876	1.23	1894
Maryland.								
Cumberland	2.99	22	1.33	— 1.66	7.47	1891	0.50	1872
Michigan.								
Kalamazoo	2.42	18	1.30	— 1.12	7.33	1877	0.42	1883
Missouri.								
Sedalia	2.60	16	2.33	— 0.27	7.67	1888	0.43	1879

Departures from average precipitation—Continued.

State and station.	(1) Average for the month of Mar.	(2) Length of record.	(3) Total for Mar., 1894.	(4) Departure from average.	(5) Extremes for March.			
					Greatest.		Least.	
					Am't.	Year.	Am't.	Year.
Montana.	*Inches.*	*Years*	*Inches.*	*Inches.*	*Inches.*		*Inches*	
Fort Custer	0.53	14	1.80	+ 1.27	1.80	1894	0.07	1882
Nebraska.								
Fort Robinson	1.16	10	1.31	+ 0.15	1.83	1888	T.	1889
Genoa (near)	1.28	18	0.60	— 0.68	3.55	1876	T.	1882
Nevada.								
Browns	0.35	22	.....	.....	2.00	1883	0.00	*
Carson City	1.45	17	0.97	— 0.48	4.22	1882	0.18	1875
New Hampshire.								
Hanover	2.32	23	1.10	— 1.22	5.25	1888	0.28	1878
New Mexico.								
Fort Wingate	1.05	23	1.30	+ 0.25	2.70	1890	0.02	1887
New York.								
Cooperstown	2.86	23	1.92	— 0.94	5.29	1871	0.55	1885
Plattsburg Barracks	1.99	23	1.91	— 0.08	3.68	1873	0.08	1889
North Carolina.								
Lenoir	4.03	22	1.16	— 2.87	10.20	1875	0.50	1879
Oklahoma.								
Fort Reno	1.67	11	1.90	+ 0.23	3.10	1892	0.00	1886
Fort Sill	1.50	22	2.82	+ 1.32	4.52	1871	0.03	1872
Fort Supply	1.46	15	0.12	— 1.34	7.62	1876	0.00	1887, '90
Oregon.								
Bandon	7.03	16	18.52	+11.49	18.52	1894	0.63	1885
Pennsylvania.								
Dyberry	3.12	23	1.55	— 1.57	5.00	1890	1.03	1885
Grampian	3.88	23	2.27	— 1.61	6.89	1875	1.34	1885
Wellsboro	4.94	14	0.24	— 4.70	10.08	1884	0.24	1894
South Carolina.								
Statesburg	3.92	13	2.52	— 1.40	7.62	1891	0.97	1887
South Dakota.								
Fort Sully	1.12	23	2.60	+ 1.48	9.60	1871	T.	1887
Texas.								
Austin	2.49	22	.....	.....	5.60	1876	0.58	1890
Silver Falls	0.60	6	T.	— 0.60	1.03	1892	0.00	1889
Utah.								
Terrace	0.42	21	1.10	+ 0.68	1.74	1884	0.00	*
Vermont.								
Strafford	3.46	21	1.10	— 2.36	4.10	1876	1.10	1894
Virginia.								
Dale Enterprise	3.40	14	0.50	— 2.90	6.86	1886	0.50	1894
Washington.								
Fort Townsend	1.82	18	1.92	+ 0.10	4.32	1876	0.11	1884
West Virginia.								
Parkersburg	2.93	8	2.31	— 0.62	6.95	1890	0.80	1885
Wisconsin.								
Madison	2.60	23	1.73	— 0.87	4.73	1882	0.30	1883
Wyoming.								
Fort Washakie	0.66	11	2.67	+ 2.01	2.67	1894	0.06	1889

*Frequently.

ACCUMULATED PRECIPITATION.

From the beginning of the year to the end of March, 1894, the total precipitation was in excess of the normal decidedly in the northern plateau and north Pacific regions, as also in North Dakota and the east Gulf States; it was especially deficient on the south Pacific coast and in New England. In detail the accumulated precipitation, as compared with the normal value, furnishes the following percentages: Northern plateau, 165; north Pacific coast and North Dakota, 130; northern slope, 137; east Gulf States, 112; Missouri Valley and southern slope (Abilene, Tex.), 100; west Gulf States, 99; upper Mississippi Valley, 97; upper Lake region and middle plateau, 95; middle Pacific coast, 94; Ohio Valley and Tennessee, 88; lower Lake region, 84; middle and south Atlantic States, 76; middle slope, 72; southern plateau, 70; New England States, 69; Key West, Fla., 48; south Pacific coast, 44.

YEARS OF GREATEST PRECIPITATION FOR MARCH.

The precipitation was the greatest on record for the month of March at the stations shown in the following table:

Station.	Current precipitation.		Previous maximum.	
	Amount.	Departure.	Amount.	Year.
Roseburg, Oreg	8.61	+5.3	8.60	1879
Spokane, Wash	2.65	+1.3	2.50	1887
Walla Walla, Wash	3.75	+2.2	2.45	1890
Miles City, Mont	4.03	+3.5	0.51	1880
Duluth, Minn	4.30	+2.8	3.13	1891
St. Paul, Minn	3.28	+1.9	3.25	1882
Fort Smith, Ark	6.82	+4.0	5.99	1890
Little Rock, Ark	9.08	+4.2	7.60	1880

YEARS OF LEAST PRECIPITATION FOR MARCH.

The current precipitation was the least on record for March at the stations shown in the following table:

Station.	Current precipitation.		Previous maximum.	
	Amount.	Departure.	Amount.	Year.
San Francisco, Cal	0.60	—2.7	0.78	1873
Fresno, Cal	0.29	—1.0	0.81	1891
Eastport, Me	1.19	—3.8	1.35	1893
Northfield, Vt	1.06	—2.3	1.13	1892
Boston, Mass	1.01	—3.4	1.15	1885
New Haven, Conn	1.15	—3.6	1.19	1885
Baltimore, Md	1.19	—2.9	1.38	1893
Washington, D. C	0.98	—3.2	1.53	1885
Lynchburg, Va	0.95	—3.9	1.03	1893
Charlotte, N. C	1.04	—3.7	1.62	1889
Titusville, Fla	0.64	—2.4	1.30	1892
Jupiter, Fla	0.69	—1.0	1.19	1891

EXCESSIVE PRECIPITATION.

The following tables for March, 1894, show, by states, the number of stations reporting total precipitation to equal or exceed 10.00 inches during this month; 2.50 in 24 hours, and 1.00 in 1 hour:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
Oregon	23	Louisiana	3
Arkansas	20	Alabama	1
Washington	7	Mississippi	1
California	4	Tennessee	1

Daily precipitation to equal or exceed 2.50 *in* 24 *hours.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Arkansas	39	4-5, 5, 5-6, 6, 14, 17-18, 17-19, 18-19, 18-20, 19, 19-20, 19-21.	Mississippi	7	5-6, 6, 15-16, 19-20.
			Tennessee	4	18, 18-19, 20.
			Alabama	3	16, 16-17, 25.
			Washington	3	15, 27-28, 28.
Louisiana	18	5, 5-6, 6, 8, 16, 19, 19-20, 20.	Georgia	2	23, 25.
			California	1	11.
Missouri	12	4-5, 5, 5-6, 19-20.	Florida	1	8.
Texas	9	5, 17-18, 18, 19, 19-20.	Indiana	1	22.
			Indian Territory	1	18.
Oregon	7	8, 11, 11-12, 13-14, 14, 15, 30.	Montana	1	19-20.
			South Dakota	1	10.

Hourly precipitation to equal or exceed 1.00.

Alabama	3	11, 17, 20, 25.	Louisiana	1	5.
Mississippi	3	16, 20, 22.	Tennessee	1	20.
Missouri	3	4, 5, 18.	Texas	1	17.
Arkansas	1	18.			

Excessive precipitation, March. 1894.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Brewton		3.00	16			
Elba		4.65	25	4.65	3 00	25
Maple Grove				1.20	1 00	11
Mobile	11.51	6.16	16-17	3.25	1 40	17
Do				1.32	1 00	20
Arkansas.						
Arkadelphia	11.35	6.95	18-20			
Arkansas City		3.10	5			
Ashdown		4.55	19			
Blanchard Springs		4.17	19-20			
Brinkley	13.35	2.50	5-6			
Do		8.90	19-21			
Camden *a*	12.12	6.52	18-20			
Camden *b*	11.87	6.39	19-20			
Cassville		3.20	5			
Conway		5.10	19-20			
Cornerstone	14.25	2.50	6			
Do		8.02	18-20			

Excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Arkansas—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Corning		2.61	5-6	1.08	0 13	18
Dardanelle	11.22	5.41	19-20			
Dallas	11.28	6.00	18-19			
Fayetteville		3.40	4-5			
Forrest	14.70	6.30	18-19			
Fort Smith		2.94	17-18			
Fulton		8.26	17-19			
Gaines Landing	10.85	3.90	5			
Do		3.60	19			
Hamburg	10.57	3.06	5-6			
Do		3.15	19			
Helena *a*		2.52	5-6			
Do		3.76	19-20			
Helena *b*		3.56	19-20			
Hot Springs	10.40	4.10	19-20			
Hot Springs (near)		4.00	19-20			
Keesees Ferry		3.37	5			
Kirby	10.40	6.50	18-19			
Little Rock		6.07	18-20			
Lonoke	13.00	5.00	19			
Madding	18.20	3.25	14			
Do		8.13	18-19			
Mount Ida	11.73	5.65	18-19			
Mount Nebo	10.10					
New Gascony	14.25	2.50	5-6			
Do		4.37	18-19			
Osceola		2.80	5-6			
Ozark		2.77	5			
Do		2.49	18			
Rison	10.12	4.31	18-19			
Rogers		3.20	4-5			
Russellville		2.70	4-5			
Stuttgart	14.33	2.60	5			
Do		6.41	19			
Washington	12.27	9.10	18-19			
Wiggs		4.30	19			
Winslow		2.60	4-5			
California.						
Crescent City	14.11	3.01	11			
Crescent City L. H	15.41					
Point George	12.56					
Florida.						
Pensacola		2.92	8			
Georgia.						
Bainbridge *b*		2.75	23			
Piscola		2.80	25			
Indiana.						
Marengo		2.50	22			
Indian Territory.						
Eufaula		3.90	17-18			
Kemp		3.17	18			
Louisiana.						
Abbeville		4.00	19-20			
Bastrop		3.35	5-6			
Do		3.99	19-20			
Baton Rouge		2.50	16			
Calhoun		3.09	6			
Do		3.73	19-20			
Coushatta *a*	10.68	2.76	5-6			
Do		5.73	19-20			
Coushatta *b*	10.46	3.15	5-6			
Do		5.90	19-20			
Farmersville		3.35	5			
Do		2.83	19			
Girard		3.23	19-20			
Grand Coteau		3.72	16			
Lawrence		2.50	8			
Liberty Hill		3.11	5			
Do		4.40	19			
Melville		4.00	16			
Minden		5.15	19-20			
Monroe	10.48	2.90	5-6			
Do		5.65	19-20			
Natchitoches		2.76	20			
Plain Dealing		3.12	19			
Shreveport		3.26	19-20			
Sugartown		2.55	19			
Winnsboro				2.00	2 00	5
Mississippi.						
Batesville		2.72	6			
Clarksdale		2.49	5-6			
Edwards	10.11			2.25	2 00	22
Greenville *a*		2.96	5-6			
Greenville *b*		2.96	5-6			
Hernando		3.63	19-20			
Louisville		2.76	15-16			
Meridian				1.12	0 35	16
Do				1.02	1 00	22
Palo Alto		2.56	15-16			
Vicksburg				1.33	1 00	20
Missouri.						
Arlington		2.90	5			
Birch Tree		3.05	5-6			
Cowgill		3.00	4-5			
Gayoso		2.95	19-20			
Grovedale		2.66	5			
Houston		3.13	5			
Ironton		2.60	5-6			
Kansas City				1.00	1 00	4
Lebanon				1.50	0 30	18

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours. Amt.	Day.	Rainfall of 1 inch, or more, in one hour. Amt.	Time.	Day.
Missouri—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Neosho				2.41	1 30	5
Olden		3.20	5-6			
Panacea		3.12	5-6			
Poplar Bluff		2.80	5-6			
Round Spring		2.96	5			
Sublette		2.50	4-5			
Montana.						
Miles City		2.80	19-20			
Oregon.						
Albany *a*	10.45					
Astoria	14.04					
Aurora (near)	11.51	2.73	15			
Bandon	18.52	3.90	11			
Do		2.50	15			
Cascade Locks	16.52					
Comstock	11.90					
Cornelius	10.84					
Corvallis (near)	11.00					
Gardiner	13.63					
Glenora	25.63	3.22	8			
Do		5.64	15			
Hood River	17.21	7.40	13-14			
Hood River (near)	12.67					
Lafayette	11.55					
Langlois	20.65	6.62	11-12			
McMinnville *a*	10.25	2.71	15			
McMinnville *b*	10.26					
Newport	13.12					
Salem *a*	10.37					
Salem *b*	10.13					
Springbrook	10.27					
Springfield	10.18					
Toledo	19.12	2.55	14			
Do		2.80	30			
West Fork	11.16					
South Dakota.						
Faulkton		2.50	10			
Tennessee.						
Bolivar		3.25	18			
Chattanooga		2.62	20	1.04	0 54	20
Covington		4.74	18-19			
Memphis	10.90	6.05	18-19			
Texas.						
Arlington		3.60	19-20			
Arthur City		5.41	17-18			
Dallas		4.62	19-20			
Duval		2.60	19			
Estella		3.88	19-20			
Graham				1.13	1 00	17
Longview		3.10	19			
Mountain Spring		4.45	19-20			
Paris		2.60	5			
Do		2.65	18			
Waco		3.45	18			
Washington.						
Aberdeen	12.53					
East Clallam	13.99					
Lapush	13.14	2.84	28			
Neah Bay	13.70					
Pysht	10.11					
Tatoosh Island	12.32	2.84	27-28			
Union City	12.93	2.56	15			

Excessive precipitation received too late for publication in February, 1894.

Alabama.						
Eufaula *c*	10.61	5.33	10-11			
California.						
Upper Lake	10.43	2.90	14			
Do		3.48	20			
Georgia.						
Columbus		3.01	11			
Thomasville	10.07	2.50	20			
Tennessee.						
Kingston		5.50	3 4			

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfalls during March, 1894, for periods of five, ten, and sixty minutes, as reported by regular stations of the Weather Bureau furnished with self-registering rain gauges. This record refers strictly to rainfall. About 37 stations are furnished with the self-registering float rain gauge and 6 with the self-registering, weighing, rain and snow gauge. The float gauge does not record snowfall, and the frequent interruptions of both the self-registers, due to snow and ice, explain the occurrence of incomplete records.

Maximum rainfall in one hour or less.

Station.	Maximum rainfall in— 5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga	0.18	16	0.25	16	0.49	16
Baltimore, Md	0.12	23	0.15	23	0.30	23
Boston, Mass	0.02	23	0.03	23	0.09	23
Buffalo, N. Y	0.21	21	0.24	21	0.28	21
Cincinnati, Ohio	0.15	22	0.20	22	0.30	15
Chicago, Ill.*	0.05	5	0.07	5	0.19	5
Cleveland, Ohio*	0.04	22	0.05	22	0.23	22
Detroit, Mich.*	0.04	6	0.08	6	0.14	22
Duluth, Minn.*	0.10	10	0.11	10	0.20	4, 10
Eastport, Me.*	0.01	18	0.02	18	0.10	18
Galveston, Tex	0.35	22	0.59	22	0.98	22
Indianapolis, Ind	0.10	22	0.15	22	0.47	22
Jacksonville, Fla	0.12	9	0.20	9	0.35	25
Jupiter, Fla	0.20	26	0.25	26	0.25	26
Kansas City, Mo	0.15	4	0.27	4	1.00	4
Key West, Fla	0.24	1	0.33	1	0.65	1
Memphis, Tenn.*	0.20	19, 22	0.30	19	0.70	18, 19
Nantucket, Mass	0.03	29	0.05	29	0.19	29
Nashville, Tenn.*	0.10	22	0.12	22	0.17	15
New Orleans, La	0.27	24	0.45	20	0.97	20
New York, N. Y	0.05	23	0.08	23	0.23	23
Norfolk, Va	0.06	29	0.08	29	0.30	29
Philadelphia, Pa	0.11	23	0.13	23	0.28	23
Portland, Oreg	0.03	8	0.05	8	0.19	8
Rochester, N. Y	0.05	22	0.10	22	0.24	22
St. Louis, Mo.*	0.12	5	0.15	5	0.50	5
St. Paul, Minn.*	0.04	4	0.08	4	0.19	4
San Diego, Cal	0.02	2	0.04	2	0.15	2
San Francisco, Cal	0.05	1	0.06	1	0.22	1
Savannah, Ga	0.05	1	0.07	1	0.31	1
Vicksburg, Miss	0.35	20	0.68	20	1.33	20
Washington, D. C	0.02	21	0.03	21	0.17	21
Wilmington, N. C.*	0.03	25	0.06	25	0.25	25

* Record incomplete.

FREQUENCY OF HEAVY PRECIPITATION SINCE 1871.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported at regular stations of the Weather Bureau in the several States and Territories for March during the last 24 years:

Frequency of excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
Georgia	13	Kentucky	1
Alabama	13	Kansas	1
California	12	Maryland	1
Washington	11	Nebraska	1
Oregon	10	Ohio	1
Mississippi	10	Rhode Island	1
Tennessee	9	Utah	1
North Carolina	9	Arizona	0
Louisiana	7	Colorado	0
Florida	6	District of Columbia	0
Arkansas	6	Idaho	0
Massachusetts	4	Indian Territory	0
South Carolina	4	Iowa	0
Texas	4	Maine	0
Connecticut	3	Michigan	0
Illinois	3	Minnesota	0
New Hampshire	3	Missouri	0
New York	3	Montana	0
Indiana	2	Nevada	0
New Jersey	2	New Mexico	0
Pennsylvania	2	The Dakotas	0
Virginia	2	Vermont	0
Wisconsin	2	West Virginia	0
Delaware	1	Wyoming	0

Frequency of excessive daily precipitation.

Alabama	19	Ohio	4
Georgia	17	Iowa	4
Louisiana	15	Kentucky	4
Texas	14	Virginia	4
Florida	14	Kansas	3
Tennessee	13	Maryland	3
North Carolina	12	New Jersey	3
Mississippi	11	Pennsylvania	3
Arkansas	10	The Dakotas	3
Indiana	9	Vermont	2
Illinois	8	Colorado	2
South Carolina	6	Rhode Island	2
Massachusetts	6	Missouri	2
New York	6	Indian Territory	2
California	6	Utah	1
Washington	6	Arizona	1
Connecticut	5	District of Columbia	1
Oregon	5	Montana	1

Frequency of excessive daily precipitation—Continued.

State.	No. years noted.	State.	No. years noted.
Delaware	0	Nevada	0
Idaho	0	New Hampshire	0
Maine	0	New Mexico	0
Michigan	0	West Virginia	0
Minnesota	0	Wisconsin	0
Nebraska	0	Wyoming	0

Frequency of excessive hourly precipitation.

Texas	9	Kansas	0
Tennessee	7	Kentucky	0
Florida	6	Maine	0
North Carolina	4	Maryland	0
Louisiana	4	Massachusetts	0
Alabama	3	Michigan	0
Arkansas	3	Minnesota	0
Georgia	2	Montana	0
Virginia	2	Nebraska	0
Mississippi	2	Nevada	0
Missouri	2	New Hampshire	0
New York	1	New Jersey	0
Pennsylvania	1	New Mexico	0
Indiana	1	Ohio	0
Arizona	0	Oregon	0
California	0	Rhode Island	0
Colorado	0	South Carolina	0
Connecticut	0	The Dakotas	0
Delaware	0	Utah	0
District of Columbia	0	Vermont	0
Idaho	0	Washington	0
Illinois	0	West Virginia	0
Indian Territory	0	Wisconsin	0
Iowa	0	Wyoming	0

EXCEPTIONAL PRECIPITATION.

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for March by any station, regular or voluntary, and in any year since 1871:

Exceptional monthly precipitation.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
	Inches.			*Inches.*	
Delta, Cal.	37.52	1889	Dunsmuir, Cal.	21.39	1889
Glenora, Oreg.	25.63	1894	Summit, Cal.	21.05	1879
Cisco, Cal.	25.30	1882	Fort Stevens, Oreg.	20.76	1873
Alta, Cal.	24.30	1879	Langlois, Oreg.	20.65	1894
Neah Bay, Wash.	23.83	1879	Carlowville, Ala.	20.50	1875
Emigrant Gap, Cal.	22.12	1874	Terrell, Tex.	20.12	1875
Do	21.69	1879	Bellevue, Nebr.	20.00	1882

Exceptional daily precipitation.

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
	Inches.			*Inches.*	
Okaloosa, La.	12.65	9, 1878	Fayetteville, N. C.	6.00	28, 1882
Kosciusko, Miss.	12.60	5–7, 1891	Dallas, Ark.	6.00	18–19, 1894
Washington, Ark.	9.10	18–19, 1894	Sturdevant, Ala.	5.91	24–25, 1892
Brinkley, Ark.	8.00	19–21, 1894	Coushatta, La. *b*	5.90	19–20, 1894
Fulton, Ark.	8.26	17–19, 1894	Palestine, Tex.	5.75	3–4, 1888
Georgetown, Cal.	8.25	19–20, 1893	Coushatta, La. *a*	5.73	19–20, 1894
Madding, Ark.	8.13	18–19, 1894	Mount Ida, Ark.	5.65	18–19, 1894
KennedyG'ld Mine, Cal.	8.00	18–21, 1893	Monroe, La.	5.65	19–20 1894
Fort Stevens, Oreg.	8.05	23–25, 1879	Canton, Miss.	5.65	7–8, 1891
Cornerstone, Ark.	8.02	18–20, 1894	Glenora, Oreg.	5.64	15, 1894
South Fork, Ky.	8.00?	22, 1890	Loudon, Tenn.	5.61	30, 1886
Chattanooga, Tenn.	7.61	29–30, 1886	Knoxville, Tenn.	5.56	29–30, 1886
Hood River, Oreg.	7.40	13–14, 1894	Glendora, Cal.	5.56	20, 1893
Atlanta, Ga.	7.36	29, 1886	Oleta, Cal.	5.50	19–20, 1893
Montgomery, Ala.	7.24	26–27, 1888	Columbus, Miss.	5.48	5–6, 1891
Arkadelphia, Ark.	6.95	18–20, 1894	Dardanelle, Ark.	5.41	19–20, 1894
Rising Sun, Ind.	6.90	5–6, 1874	Arthur City, Tex.	5.41	17–18, 1894
Hatteras, N. C.	6.72	30, 1879	Diamond, Ga.	5.40	7–8, 1891
Viaden, Miss.	6.71	7–8, 1891	Rabun Gap, Ga.	5.40	28, 1888
Creswell, Kans.	6.70	31, 1876	Clinton, Tenn.	5.30	30, 1886
Langlois, Oreg.	6.62	11–12, 1894	Wilmington, N. C.	5.26	27, 1882
Charleston, Tenn.	6.57	30, 1886	Sharp, Tenn.	5.23	7–8, 1891
Camden, Ark. *a*	6.52	18–20, 1894	Minden, La.	5.15	19–20, 1894
Kirby, Ark.	6.50	18–19, 1894	Union Springs, Ala.	5.15	23–24, 1892
Vicksburg, Miss.	6.47	7–8, 1891	Hawkinsville Ga.	5.12	25–26, 1892
Mobile, Ala.	6.46	24, 1872	Conway, Ark.	5.10	19–20, 1894
Stuttgart, Ark.	6.41	19, 1894	Marshallville, Ga.	5.07	25, 1892
Camden, Ark. *b*	6.39	19–20, 1894	Hatteras, N. C.	5.06	21–22, 1877
Forrest, Ark.	6.30	18–19, 1894	Point Pleasant, La.	5.01	14–15, 1880
Union Springs, Ala.	6.20	27, 1888	Thayer, Mo.	5.01	10–11, 1890
Mobile, Ala.	6.16	16–17, 1894	Henderson, N. C.	5.00	7–8, 1891
Winnsboro, La.	6.10	7–8, 1891	Fort Sully, S. Dak.	5.00	21–22, 1871
Little Rock, Ark.	6.07	18–20, 1894	Tiffin, Ohio	5.00	12–13, 1874
Memphis, Tenn.	6.05	18–19, 1894	Marengo, Ind.	5.00	12–13, 1890
Lake Charles, La.	6.00	20, 1893	Lake Charles, La.	5.00	12–13, 1890
Clarksville, Tex.	6.00	28, 1875	Lonoke, Ark.	5.00	19, 1894
Terrell, Tex.	5.00	5, 1876			

Exceptional precipitation for one hour or less.

Station and state.	Amount.	Time.	Date.
	Inches.	*h. m.*	
Galveston, Tex.	0.35	0 05	22, 1894
Vicksburg, Miss.	0.35	0 05	20, 1894
Wilmington, N. C.	0.32	0 05	18, 1892
St. Louis, Mo.	0.30	0 05	27, 1890
New Orleans, La.	0.27	0 05	24, 1894
Jupiter, Fla.	0.25	0 05	23, 1890
Do	0.25	0 05	7, 1892
Stuttgart, Ark.	1.20	0 10	23, 1893
Vicksburg, Miss.	0.68	0 10	20, 1894
St. Louis, Mo.	0.60	0 10	27, 1890
Key West, Fla.	0.35	0 10	27, 1891
Corning, Ark.	1.08	0 13	18, 1894
Centralia, Ill.	1.33	0 15	28, 1890
Howe, Tex.	1.75	0 20	21, 1890
Merkel, Tex.	1.56	0 30	10, 1890
Biscayne, Fla.	4.10	0 30	28, 1874
Kingston Springs, Tenn.	1.67	0 30	25, 1884
Lebanon, Mo.	1.50	0 30	18, 1894
Jupiter, Fla.	2.95	0 33	26, 1893
Terrell, Tex.	4.00	1 00	19, 1876

MONTHLY SNOWFALL.

The depth of snow that fell during the month of March, 1894, as reported by both regular and voluntary observers, is shown by the lines and figures on Chart V, which also gives, by the full line, the limit of the region within which a minimum temperature of 32° F. was at any time reported during the month, and by the dotted line is given a similar limit for 40°. The temperature of 40° within a thermometer shelter is very apt to be accompanied by frosts on the open surface of the ground. The minimum air temperatures within Weather Bureau shelters are, of course, higher than the temperatures recorded by thermometers in the open air and nearer the surface of the ground such as is the usual exposure among voluntary observers. The actual depth of snowfall, when above 10 inches, is given in a table in the following section in connection with the depth of snow on the ground. As compared with the normal it will be seen that the snowfall for March was in excess in the Lake Superior region.

SPECIAL SNOWFALL, MARCH 25–30, 1894.

The following table shows the time of beginning and ending and the total depth of snowfall reported during the severe cold wave of March 25–30, 1894, at stations south of the Ohio and east of the Mississippi rivers, and also includes stations in Arkansas, Missouri, Oklahoma, Indian Territory, and Texas:

Stations.	Beginning and ending.	Depth.
Alabama.		*Inches.*
Carrollton	Morning, 29th	T.
Florence	28th	1.0
Livingston	29th	T.
Newburg	9 p. m., 28th, to 5 a. m., 29th	1.0
Scottsboro	29th	T.
Union	29th	1.0
Arkansas.		
Blanchard Springs	2 p. m. to 9 p. m., 28th	T.
Brinkley	1 p. m. to 5 p. m., 28th	2.0
Cassville	28th	0.7
Conway	11 a. m. to 6 p. m., 28th	2.0
Cornerstone	5.15 p. m. to 8 p. m., 28th	2.0
Corning	9 a. m. to 5 p. m., 28th	3.0
Dardanelle	28th	2.0
Dallas	9 a. m. to 2 p. m., 28th	1.0
Fayetteville	Noon to 2 p. m	1.0
Forrest City	29th	2.0
Fort Smith	11.45 a. m. to 2.35 p. m., 28th	0.2
Gaines Landing	Night of 27th	4.0
Hamburg	29th	2.0
Helena	6 p. m., 28th, to early a. m., 29th	1.0
Keesees Ferry	28th	0.1
Kirby	28th	2.0
Little Rock	5.30 p. m. to 8.07 p. m., 28th	1.0
Lonoke	11 a. m. to 7 p. m., 28th	2.0
Madding	29th	2.0
Mount Ida	28th	3.0
Mount Nebo	10 a. m. to 4 p. m., 29th	2.0
Newport	11 a. m. to 7 p. m., 28th	1.0
Osceola	28th	2.0
Rison	28th	1.0
Russellville	11 a. m. to 3 p. m., 28th	T.
Searcy	9 a. m. to 7 p. m., 28th	4.0
Stuttgart	28th	0.5

Special snowfall—Continued.

Stations.	Beginning and ending.	Depth.
Arkansas—Continued.		*Inches.*
Washington	Noon to 7 p. m., 28th	0.2
Winslow	9 a. m. to 1 p. m	2.5
Georgia		
Diamond	29th	1.0
Marietta	29th	T.
Indian Territory.		
Eufaula	28th	T.
Gwenndale	28th	T.
Lehigh	27th	T.
South McAlester	28th	T.
Kentucky.		
Blandville	10 a. m. to 7 p. m., 28th	2.0
Bowling Green	9 p. m., 27th, to early a. m., 28th	2.0
Burnside	29th	1.0
Canton	28th	1.0
Catlettsburg	1 p. m., 28th, to 7.30 a. m., 29th	1.0
Edmonton	29th	2.0
Elizabethtown	28th	2.0
Eubanks	29th	2.0
Falmouth	29th	1.0
Franklin	8 p. m., 28th, to 6 a. m., 29th	1.5
Greensburg	10 p. m., 28th, to 8.30 a. m., 29th	1.0
Harrodsburg	29th	1.0
Hendricks	29th	1.0
Mount Sterling	Early a. m. to 9 a. m., 29th	1.9
Paducah	4 p. m. to 11 p. m., 29th	1.5
Richmond	29th	2.0
Russellville	29th	1.5
Shelbyville	6.30 p. m., 28th, to 9 a. m., 29th	2.0
Springfield	28th	1.5
Louisiana.		
Bastrop	29th	T.
Lake Providence	5 p. m. to 9 p. m., 28th	1.0
Plain Dealing	28th	0.1
Maryland.		
Oakland	Night, 25th, to 11 p. m., 26th	5.0
Sunnyside	6 a. m., 25th, to 7 p. m., 26th	8.0
Mississippi.		
Aberdeen	29th	1.0
Agricultural College	29th	1.0
Batesville	29th	1.5
Canton	29th	0.8
Clarksdale	4 p. m. to 9 p. m., 28th	2.0
Duck Hill	28th	T.
Greenville	29th	0.5
Itta Bena	4 p. m. to 10 p. m., 28th	1.0
Kosciusko	Night of 28th	0.5
Louisville	8 p. m., 28th, to early a. m., 29th	2.0
Macon	11 p. m., 28th, to 1 a. m., 29th	0.1
Meridian	29th	T.
Okolona	7 p. m. to 11 p. m., 29th	T.
Palo Alto	9 p. m. to midnight, 28th	1.0
Pontotoc	6 p. m. to midnight, 28th	3.0
Topton	29th	0.3
University	29th	0.8
Vicksburg	29th	T.
Water Valley	28th	2.0
Missouri.		
Big Piney	8 a. m. to 2 p. m., 28th	3.0
Half Way	28th	1.0
Houston	11 a. m. to 1 p. m., 28th	1.0
Lebanon	28th	2.0
Panacea	8 a. m. to 10 p. m., 28th	2.5
Poplar Bluff	28th	1.0
Potosi	10 a. m. to 2.30 p. m., 28th	1.0
Sarcoxie	7.30 a. m. to 11.20 p. m., 28th	1.5
Virgil City	28th	1.0
North Carolina.		
Blowing Rock	29th	T.
Henderson	26th	1.5
Highlands	28th	2.0
Horse Cove	29th	1.2
Littleton	25th	1.2
Louisburg	3 a. m. to 8 a. m., 25th	2.0
Washington	26th	1.0
Oklahoma.		
Arapaho	28th	0.5
Burnett	28th	0.2
Clifton	28th	0.5
Stillwater	28th	0.2
South Carolina.		
Blacksburg	29th	T.
Gaffney	7 a. m. to 8 a. m., 29th	T.
Tennessee.		
Ashwood	29th	0.8
Bolivar	28th	1.0
Bristol	29th	1.0
Byrdstown	29th	2.8
Carthage	11.10 p. m., 28th, to 6.20 a. m., 29th	1.5
Clarksville	7.30 p. m., 28th, to midnight, 29th	2.0
Covington	3 p. m. to midnight, 28th	2.0
Florence Station	Night of 28th to 7 a. m., 29th	2.0
Franklin	Early a. m., 29th	1.0
Hohenwald	Early a. m., 29th	2.0
Jackson	29th	2.0
Lynnville	29th	1.5
Nashville	11.15 p. m., 28th, to 8.40 a. m., 29th	1.5
Nunnelly	1 a. m. to 4 a. m., 30th	1.5
Rugby	9 p. m., 28th, to 11 a. m., 29th	2.0
Springdale	2 a. m. to 11 a. m., 29th	2.0
Trenton	Early a. m., 29th	1.5
Tullahoma	1 a. m. to 5 a. m., 29th	1.0
Waynesboro	28th	3.0
Wier	Night of 28th to 6 a. m., 29th	4.0
Texas.		
Amarillo	7.45 a. m. to 10.05 a. m., 25th	T.
Coldwater	Early a. m., 25th	1.0
Dallas	3 p. m. to 4 p. m., 28th	T.

Special snowfall—Continued.

Stations.	Beginning and ending.	Depth.
Texas—Continued.		*Inches.*
Estella	A few minutes, about 2 p. m., 28th.	T.
Gainesville	28th	T.
Hartley	Early a. m. to 9 a. m., 25th	1.0
Virginia.		
Big Stone Gap	4 a. m. to 7 a. m., 25th	1.0
Birdsnest	5.10 a. m., 25th, to 7.05 a. m., 26th	0.2
Hot Springs	7 a. m. to noon, 29th	0.5
Marion	All day, 29th	1.5
Spottsville	Midnight to 5 a. m., 26th	0.5
Stephens City	29th	1.5
West Virginia.		
Bluefield	6.30 a. m., 28th, to 4 p. m., 29th	3.0
Davis	7 a. m., 25th, to 6 a. m., 27th	6.0
Elkhorn	All day, 29th	1.0
Grafton	6 a. m., 25th, to noon, 26th	1.0
Marlinton	29th	1.0
New Martinsville	26th	1.8
Pleasant Hill	25th and 26th	5.0
Raleigh	29th	2.0
Tannery	25th and 26th	3.0
Weston	26th and 27th	1.5

DEPTH OF SNOW ON GROUND.

The depth of unmelted snow lying on the ground at 8 p. m. March 31, is shown by the figures on the accompanying chart, No. VI, and also in the accompanying table. Owing to the irregularly scattered distribution of snow at the close of the month, it does not seem proper to attempt to draw lines of equal depth of snow, but the figures given on Chart VI show that 20 inches still lay on the ground on the southwestern shore of Lake Superior; 10 or 15 inches in the interior of Maine; over 30 inches in favorable locations in the mountains of Colorado, Utah, Idaho, northern Nevada, and northern California.

From the weekly series of charts showing the depth of snow lying on the ground on each successive Monday at 8 p. m., notwithstanding the small number of telegraphic reports on which the charts are based, the following summary has been compiled:

March 5.—The southern limit of snow has receded northward by from 700 to 900 miles, and the limit now extends from northern Massachusetts westward to Saugeen, Ont., and from near Alpena, Mich., to Duluth, Minn., thence southwest to Salt Lake City, Utah, and Winnemucca, Nev., thence northward to Portland, Oreg., and Spokane, Wash.; maxima of about 15 inches are reported from Sault Ste. Marie, Mich., and 10 or 12 inches in central and western Maine.

March 12.—During the past week the snow has still further disappeared; 9 inches are reported from Sault Ste. Marie, Mich., and 7 at Marquette, Mich., but less than 2 inches at all other stations.

March 19.—Four inches at Marquette and Sault Ste. Marie, Mich.; only a trace in Maine, but a maximum of 9 inches at Williston, N. Dak., whence an area of 3 inches extends southwestward and an area of 1 inch reaches into Idaho.

March 26.—During the intervening week considerable snow fell, and on the 26th, p. m., there were reported 21 inches at Marquette, Mich., 8 inches at Duluth, Minn., and 4 inches at Sault Ste. Marie, Mich.; the line of no snow on the ground now extends through southern Maine to Lake Ontario, western New York, and Pennsylvania to Parkersburg, W. Va., central Ohio, and central Wisconsin to central Minnesota, and thence southwest into central Colorado and northwestward along the Rocky Mountain Divide.

Snowfall of 10 *inches or more, March,* 1894, *with amounts on ground on the* 15*th and at the close of the month.*

State and station.	Total.	15th.	31st.	State and station.	Total.	15th.	31st.
Arizona.	*Inches.*	*Ins.*	*Ins.*	*Arizona*—Cont'd.	*Inches.*	*Ins.*	*Ins.*
Chiricahua Mountain	18.0	.....	.....	Show Low	17.3	0.0	0.0
Eagle Pass	13.1	.....	.....	Walnut Ranch	21.0	.....	.....
Flagstaff	52.0	.....	.....	Wilgus	11.5	.....	.....
Globe	11.0	0.0	0.0	*California.*			
Oracle	11.5	0.0	0.0	Cisco	53.0	.....	.....
Saint Helena Ranch	22.0	.....	.....	Deep Creek	18.0	.....	.....

Snowfall of 10 *inches or more*—Continued.

State and station.	Total.	15th.	31st.
California—Cont'd.	*Inches.*	*Ins.*	*Ins.*
Edgwood	10.0	.....	.....
Edmanton	31.0	61.0	40.0
Emigrant Gap	18.0	.....	.....
Girard	18.0	.....	.....
Green Valley	21.0	.....	.....
Julian	18.0	.....	.....
Lick Observatory	12.0	0.0	0.0
Little Bear Valley	21.5	.....	.....
Little Bear V. (near)	16.0	.....	.....
Lower Holcomb Valley	17.5	.....	.....
Morses House	26.0	.....	.....
Shasta Springs	20.8	.....	.....
Sisson	21.0	.....	.....
Squirrel Inn	18.0	.....	.....
Summit	34.0	.....	.....
Towles	12.0	.....	.....
Truckee	22.5	.....	.....
Tunnel No. 2	12.0	.....	.....
Colorado.			
Boulder	14.0	0.0	0.0
Box Elder	10.2	.....	.....
Breckenridge	15.0	36.0	30.0
Canyon	10.0	0.0	0.0
Climax	48.1	84.0	72.0
Collbran	17.9	.....	8.5
Denver	10.0	0.0	0.0
Downing	10.0	.....	.....
Dumont	11.0	0.0	0.0
Gold Hill	13.8	5.0	2.0
Greenhorn	31.0	.....	.....
Manhattan	11.0	.....	.....
Moraine	16.0	0.0	0.0
Pagoda (near)	10.5	6.0	0.0
Pikes Peak	26.4	0.6	15.0
Red Cliff	29.5	.....	.....
Rico	35.2	.....	.....
River Bend	10.0	.....	.....
St. Cloud	11.0	0.0	0.0
Scissors	22.0	0.0	3.0
Smoky Hill Mine	19.0	.....	.....
Stamford	16.0	.....	3.0
Steamboat Spring	16.0	24.0	20.0
Sunnyside	13.2	.....	.....
Surface Creek	16.0	.....	.....
Ward District	15.3	.....	.....
Yuma	11.0	T.	0.0
Idaho.			
American Hill	13.0	.....	.....
Atlanta	72.0	100.0	78.0
Garden Valley	30.0	49.0	30.0
Grangeville	22.1	.....	.....
Hailey	20.8	.....	.....
Idaho City	29.5	40.0	30.0
Lake	29.0	38.0	30.0
Murray	57.0	40.0	30.0
Oakley	17.0	.....	.....
Paris	6.0	10.0	.....
Salubria	29.0	21.0	9.5
Soldier	24.5	36.0	24.0
Indiana.			
South Bend	11.0	0.0	0.0
Maine.			
Bar Harbor	11.0	1.5	0.0
Calais	11.0	7.0	3.0
Cornish	17.0	18.0	4.0
Farmington	11.8	12.0	.....
Houlton	12.0	10.0	4.0
Indian Stream	10.5	20.0	15.0
Lewiston	10.0	.....	.....
Madison	17.0	.....	.....
North Bridgton	17.0	16.0	10.0
Michigan.			
Benton Harbor	15.1	0.1	0.0
Berrien Springs *a*	15.5	.....	1.0
Calumet	23.0	24.0	24.0
Cheboygan	11.0	2.0	0.0
Harrisville	13.0	.....	.....
Marquette	26.5	8.1	5.4
Vandalia	13.0	.....	0.2
Minnesota.			
Alexandria *a*	12.0	.....	0.0
Cambridge	10.0	.....	.....
Campbell	13.3	0.0	0.0
Cromwell	11.7	1.6	3.0
Crookston *a*	11.0	.....	.....
Duluth	21.6	5.0	T.
Fergus Falls	11.8	0.3	0.5
Fort Ripley	10.0	.....	.....
Lake Vermillion	16.0	7.0	11.0
Lake Winnibigoshish	18.8	7.0	4.5
Leech Lake	17.9	6.0	8.0
Maple Plain	11.4	T.	T.
Marfield	18.8	8.0	7.0
Minneapolis (W. B.)	11.2	T.	T.
Minneapolis *a*	11.1	0.0	0.0
Moorhead	15.5	0.0	T.
New London	13.7	.....	.....
Park Rapids	10.5	.....	T.
Pine River	12.0	3.0	T.
Pokegama Falls	16.7	6.0	9.0
Sandy Lake Dam	15.6	0.9	T.
Sunrise City	13.5	T.	0.0
Two Harbors	23.3	20.0	10.0
Montana.			
Fort Custer	14.4	.....	.....
Fort Keogh	11.0	.....	.....
Fort Logan	13.0	3.0	.....
Glendive	21.0	.....	.....
Great Falls	14.6	.....	.....
Hogan	6.3	10.0	.....
Martinsville	17.0	3.0	.....
Miles City	36.2	0.6	0.0
Mingusville	17.0	T.	0.6
Powder River	31.0	2.0	.....
Red Lodge	32.0	.....	10.5
Virginia City	11.5	.....	.....
Nebraska.			
Fort Robinson	13.1	0.0	0.0
Hay Springs	18.0	0.0	.....
Kennedy	12.5	0.0	0.0
Kimball	11.5	.....	0.0
North Platte	13.1	0.0	0.0
Wallace	10.0	.....	.....
Whitman	13.0	.....	.....
Nevada.			
Austin	24.6	0.0	0.0
Edgewood	10.0	26.0	14.0
Ely	42.0	T.	0.0
Eureka	15.5	0.0	0.0
Fenelon	18.0	.....	.....
McGill	24.0	0.0	0.0
Osceola	21.2	0.0	0.0
Palisade	12.5	0.0	0.0
Stofiel	31.5	13.5	7.0
Sunnyside	11.5	5.0	0.0
Toano	12.7	0.0	0.0
Tybo	16.0	T.	T.
Virginia City	15.1	.....	0.0
Wells	15.2	.....	.....
New Hampshire.			
Berlin Mills	16.5	2.0	0.0
Bethlehem	10.0	4.0	T.
Lancaster	8.5	11.0	5.0
Littleton	12.5	.....	.....
North Conway	20.0	.....	.....
Plymouth	9.8	20.0	.....
Stratford	11.0	.....	4.0
West Milan	16.5	5.0	5.0
New Mexico.			
Chama	26.0	.....	2.0
New York.			
Baldwinsville	10.0	2.0	0.0
Le Roy	10.0	2.0	0.0
North Dakota.			
Berlin	14.8	0.0	4.0
Bismarck	21.3	0.0	3.0
Churchs Ferry	16.5	.....	.....
Dickinson	7.4	6.0	12.0
Forman	10.5	0.0	0.0
Fort Berthold	29.8	7.8	1.0
Fort Stevenson	13.7	1.0	5.0
Fort Yates	19.7	.....	0.5
Grafton	10.0	0.0	3.0
McKinney	15.0	9.0	5.0
Milton	10.0	.....	.....
Napoleon	12.5	.....	6.0
Oakdale	25.5	.....	6.0
Power	12.5	0.0	3.0
St. Johns	21.0	0.0	6.0
Wahpeton	10.5	.....	.....
Washburn	11.2	T.	.....
Wild Rice	10.2	.....	2.0
Ohio.			
Binola	20.0	0.0	.....
Bissells	13.0	0.0	.....
Elyria	15.6	.....	.....
Hillhouse	11.0	.....	.....
Wheeler	17.0	2.0	2.0
Oregon.			
Beulah	13.0	2.0	0.0
Canyon City	19.5	0.0	0.0
Glenora	14.9	10.0	4.0
Hood River (near)	29.0	4.0	0.0
Joseph	23.0	5.0	0.0
Klamath Falls	12.0	.....	.....
Siskiyou	68.0	.....	.....
Sparta	39.0	36.0	10.0
Pennsylvania.			
Confluence	2.0	10.0	.....
Edinboro	10.0	.....	2.0
South Dakota.			
Aberdeen	14.0	2.0	.....
Ashcroft	26.0	.....	8.0
Cross	21.8	T.	4.0
Faulkton	23.0	.....	.....
Fort Meade	33.7	.....	.....
Fort Sully	15.5	.....	.....
Gale	12.0	0.0	0.0
Highmore	16.0	.....	.....
Midland	14.0	0.0	0.0
Oelrichs	38.1	.....	.....
Piedmont	34.5	T.	T.
Pierre	11.7	0.0	T.
Rapid City	10.5	0.0	T.
Rosebud	10.0	0.0	.....
Spearfish	64.0	1.0	10.0
Webster	10.8	0.0	0.0
Utah.			
Castle Gate	13.5	0.0	0.0
Coalville	12.0	.....	.....
Glendale	13.5	.....	.....
Grouse Creek	10.3	4.1	0.0
Heber	11.5	10.0	0.0
Koosharem	10.0	T.	0.0
Loa	10.8	.....	.....
Logan	13.0	.....	.....

Snowfall of 10 *inches or more*—Continued.

State and station.	Total.	15th.	31st.
Utah—Cont'd.	*Inches.*	*Ins.*	*Ins.*
Mount Pleasant	17.0	.....	.....
Ogden *a*	11.0	.....	.....
Parowan	26.5	.....	.....
Provo City	11.0	.....	.....
Randolph	18.5	4.0	.....
Salt Lake City	10.2	0.0	0.0
Scofield	19.0	.....	.....
Silver Lake	76.0	86.0	90.0
Snowville	16.0	6.0	.....
Soldier Summit	34.0	.....	.....
Terrace	11.0	.....	.....
Thistle	15.0	.....	.....
Vermont.			
Irasburg	13.0	14.0	T.
Stratford	12.0	15.0	12.0
Washington.			
Elbe	24.2	12.0	.....
Fort Simcoe	11.0	.....	.....
Hunters	14.4	20.0	.....
Pine Hill	22.0	0.0	0.0
Washington—Cont'd.	*Inches.*	*Ins.*	*Ins.*
Rosalia	11.8	0.2	T.
Union City	25.5	3.0	.....
Wenatchee Lake	29.4	49.0	44.0
Wisconsin.			
Barron	11.5	3.0	0.0
Bayfield	34.0	10.0	20.0
Butternut	7.0	18.0	20.0
Grantsburg	13.0	.....	.....
Hayward	17.0	24.0	T.
Wyoming.			
Big Horn Ranch	34.8	0.0	0.0
Fort McKinney	15.5	.....	.....
Fort Washakie	26.7	.....	.....
Fort Yellowstone	22.6	.....	.....
La Barge	17.0	2.0	0.0
Lander (W. B)	32.9	0.0	0.0
Lander (V. O.)	42.0	.....	.....
Saratoga	11.0	.....	.....
Sheridan	25.0	4.0	12.0
Sundance	15.0	.....	.....

HAIL.

Description of the more severe hailstorms of the month is given under "Local storms." Hail was reported as follows: 2d, California, Kansas, Nevada, and Oregon. 3d, California and Texas. 4th, Arizona, Arkansas, California, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, South Dakota, and Texas. 5th, Arizona, California, Indian Territory, Missouri, Oklahoma, and Texas. 6th, Alabama and Illinois. 7th, Illinois, Kentucky, Louisiana, Nevada, Tennessee, and Washington. 8th, Georgia and New York. 9th, California, Illinois, Louisiana, and Nevada. 10th, Arkansas, Michigan, and Texas. 11th, Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Tennessee, and Washington. 12th, California, Mississippi, and North Carolina. 13th, Michigan, Pennsylvania, Texas, and Washington. 14th, Arkansas, Illinois, Iowa, Massachusetts, Missouri, North Carolina, Tennessee, and Texas. 15th, Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Michigan, Mississippi, Missouri, New York, Ohio, Pennsylvania, Tennessee, Texas, and West Virginia. 16th, Arkansas, California, Idaho, Louisiana, Mississippi, Montana, Nevada, Oregon, Texas, and Washington. 17th, Alabama, Arkansas, Indian Territory, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Nevada, North Carolina, Oklahoma, South Carolina, Texas, and Wisconsin. 18th, Arkansas, California, Idaho, Indian Territory, Louisiana, Michigan, Minnesota, Mississippi, New Mexico, Oklahoma, Texas, Washington, and Wisconsin. 19th, Alabama, Arkansas, California, Louisiana, and Texas. 20th, California, Georgia, Kentucky, Louisiana, Mississippi, and Ohio. 21st, Illinois, Maine, Michigan, Minnesota, Mississippi, Nebraska, New York, Tennessee, and Wisconsin. 22d, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, Nebraska, New York, Ohio, Tennessee, and Texas. 23d, Delaware, New York, and Tennessee. 24th, Connecticut and Louisiana. 25th, Tennessee. 28th, Tennessee. 29th, Idaho, North Carolina, and Tennessee. 30th, Montana. 31st, Colorado, Louisiana, and Utah.

SLEET.

Description of the more severe sleetstorms of the month is given under "*Local storms.*" Sleet was reported as follows: 1st, Colorado, Nevada, and Washington. 2d, California, Nevada, Oregon, Pennsylvania, Washington. 3d, Arizona, California, Nevada, New Mexico, Oregon, and Utah. 4th, Arizona, California, Colorado, Minnesota, Nebraska, New Mexico, North Dakota, South Dakota, and Washington. 5th, Iowa, Minnesota, Nevada, Oregon, Washington, and Wisconsin. 6th, Michigan, Nevada, and Pennsylvania. 7th, California, Idaho, Nevada, Ohio, and Washington. 8th, Minnesota, New York, Ohio, Oregon, Pennsylvania, Washington, and Wisconsin. 9th, California, Massachusetts, Montana, Nevada, Utah, and Washington. 10th, Iowa, Minnesota,

South Dakota, and Wisconsin. 11th, Utah and Washington. 13th, New York and Washington. 14th, Illinois, Iowa, Minnesota, North Dakota, Ohio, Oregon, and Wisconsin. 15th, Illinois, Michigan, New Jersey, North Dakota, Ohio, Pennsylvania, Washington, and Wisconsin. 16th, Arizona, California, Nevada, Oregon, Utah, and Washington. 17th, Arizona, New Mexico, Oregon, and Utah. 18th, Arizona, California, Kansas, Nevada, Oregon, and Washington. 19th, Arizona, California, Nevada, North Dakota, Oregon, South Dakota, and Utah. 20th, Arizona, California, Colorado, Minnesota, Nebraska, Nevada, North Dakota, and South Dakota. 21st, Arizona, Maine, Michigan, Minnesota, Nebraska, Nevada, New Mexico, South Dakota, Vermont, and Wisconsin. 22d, Iowa, Massachusetts, Michigan, Minnesota, New York, Ohio, Pennsylvania, Vermont, West Virginia, and Wisconsin. 23d, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, North Dakota, Vermont, and West Virginia. 24th, Michigan and New York. 25th, New Hampshire, Ohio, and Tennessee. 26th, Kentucky and New York. 27th, Alabama and Nebraska. 28th, Arkansas, Illinois, Indiana, Kentucky, Louisiana, Mississippi, Missouri, South Carolina, and Tennessee. 29th, Connecticut, Michigan, Mississippi, Montana, New Jersey, North Carolina, South Carolina, Virginia, and Wisconsin. 31st, Arizona, Colorado, Minnesota, New Mexico, and Wisconsin.

WET AND DRY PERIODS IN RELATION TO AGRICULTURE.

The Weather Crop Bulletin for the month of March shows that the precipitation was unusually small over all sections east of the Mississippi, and that the month was also very dry in California, but heavy rainfall occurred in northeast Texas, Arkansas, and on the Gulf coast of Louisiana, Mississippi, and Alabama, and also on the coast of Oregon and Washington. As regards rain and snow in relation to agriculture, the following notes are taken from this bulletin, as also from the monthly reports of the State weather services and other sources:

Arkansas.—Late heavy rains have delayed farm work.

Arizona.—Great excess of precipitation; grass ranges and live stock in fine condition; farming operations well advanced.

California.—The northern portion needs rain, but the rest of the State much more so; outdoor work is backward for the lack of rain; grain crop will be short unless spring showers soon come.

Colorado.—Frequent snows favorable for spring work; total snowfall on southern mountains 9 feet, or 2 feet more than last year; grass getting green.

Florida.—Heavy rains delayed planting in the western portion; elsewhere the season is earlier than usual.

Georgia.—Farm work delayed by much rain in the southern portion.

Idaho.—Snow is disappearing rapidly; season opens earlier than usual; little or no farm work done as yet, except in the western sections.

Illinois.—Conditions unusually favorable for farm work up to the 24th.

Indiana.—Wheat wintered well and is far advanced.

Iowa.—During the first twenty days abundant moisture; seeding and plowing far advanced; winter wheat and some spring cereals considerably injured by the weather of the last decade.

Kansas.—Unusually warm and dry; dry weather makes the wheat backward.

Kentucky.—Up to the 25th deficient precipitation and excessive temperature set all crops, vegetation, and farm work three weeks ahead.

Louisiana.—Heavy rains delayed planting.

Minnesota.—Precipitation in excess, especially in the latter half of the month; ground is generally frozen, but soil is gradually getting in good condition; stock wintered well; bees are in better condition than for several years.

Mississippi.—The heavy rains have delayed the season.

Missouri.—Weather unusually favorable up to the 22d.

Montana.—More than the usual amount of precipitation; the snow has but recently melted and farming is not yet begun.

Nebraska.—The first twenty days exceptionally fine and farm work advanced well; winter wheat looks well.

New Mexico.—Weather favorable for farm work; feed abundant; range stock in excellent condition.

New York.—The season is early; soil is in fine condition; grass and grain wintered finely; good maple sugar season.

North Carolina.—The season was forced ahead by the fine weather up to the 26th, when the freeze caused enormous damage.

North Dakota.—Ground covered with snow; very little seeding before the 20th and nothing since.

Ohio.—Weather conditions favorable until the recent cold.

Oklahoma.—Fine weather and abundant rain up to the 24th, when cold and frost set everything back.

Pennsylvania.—First three weeks of fine weather; the cold of last week did little damage; season unusually early; the dryness and slow moderation of the weather greatly in favor of all crops.

South Carolina.—Up to the 24th the abundant moisture in the soil and the midsummer heat advanced the season by two weeks; owing to the frost, replanting will be necessary.

South Dakota.—Precipitation considerably above normal; season unusually early; no material damage by the cold weather of the last week; ample moisture in the ground.

Tennessee.—Precipitation below the normal; up to 23d season two weeks in advance; cold wave of the 26th did great damage.

Texas.—Up to the 20th the season was two weeks earlier than the average, but as a result of the frost is now two or three weeks late.

Vermont.—Month unusually warm and dry, unfavorable for maple sugar.

Virginia.—Until the recent freeze farming was unusually advanced.

Washington.—Rainfall above normal; vegetation backward, but earlier than last year.

West Virginia.—Precipitation below average; vegetation well advanced until the hard freeze and frosts of the 26th and 28th; light snow afforded some protection to the wheat and oats; grass in good condition.

Wisconsin.—Winter grain in fair condition; very little farm work done as yet.

Utah.—Precipitation below the normal, but the large amount of snow in the mountains will give good supply for irrigation for the ensuing season; the spring is backward; Utah escaped the frosts of the close of March.

WIND.

PREVAILING WINDS.

The prevailing winds for March, 1894, viz, those that were recorded most frequently at Weather Bureau stations, are shown in Table I, but are not given on Chart II, as has hitherto been the custom. The summary of State Weather Service reports gives the prevailing winds recorded at voluntary stations in the respective States; these may be summarized as follows:

South.—Alabama, Arkansas, Georgia, Idaho, Illinois, Iowa, Kansas, Louisiana, New York, Oklahoma, Tennessee, Texas.

Southwest.—Arizona, Delaware, Indiana, Kentucky, Michigan, Missouri, Montana, Nevada, New England, North Carolina, Ohio, Oregon, South Carolina, Utah, Virginia, Washington, Wisconsin.

West.—California, Colorado, Maryland, West Virginia, Pennsylvania, Wyoming.

Northwest.—Minnesota, Nebraska, New Jersey, North Dakota, South Dakota.

North.—None.

Northeast.—None.

East.—Florida.

Southeast.—None.

RESULTANT WINDS.

The resultants for the current month, as deduced from the hourly records of winds, by self-registers at about 67 regular Weather Bureau stations, are given in Table VIII. Other resultants, deduced from the personal observations made at 8 a. m. and 8 p. m. at all stations that appear on the morning and evening maps of the Weather Bureau, are given in Table IX. These latter resultants are also shown graphically on Chart II, in connection with the isobars based on the same system of simultaneous observation; the small figure attached to each arrow shows the number of hours that this resultant prevailed, assuming each of the morning and evening observations to represent one hour's duration of a wind of average velocity; these figures (or the ratio between them and the